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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/606,193

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EXAMINER

TRAN, BINH Q

ART UNIT

PAPER NUMBER

3748

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,193

Applicant(s)

BRINKMAN ET AL.

Examiner

BINH Q. TRAN

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 and 48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38, 48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is in response to the amendment filed September 28, 2006.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-38, and 48 are rejected under 35 U.S.C. 102 (b) as being anticipated by Murphy et al. (Murphy) (Patent Number 6,122,909).

Regarding claims 1 and 48, Murphy discloses a device comprising an engine (15) and a NOx removal system (e.g. 30, 31, 189) for removing nitrogen oxides from an exhaust generated by said engine, said NOx removal system comprising a NOx treatment section (e.g. 30, 31, 189), a diverter (e.g. 48, 51), and a hydrogen generation section (e.g. 50), wherein: said exhaust comprises oxygen and nitrogen oxides; said NOx treatment section is configured to remove nitrogen oxides from said exhaust (Fig. 1-5); said diverter (e.g. 48, 51) is configured to enable delivery of water to said hydrogen generation section; said hydrogen generation section is

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configured to deliver hydrogen to said NOx treatment section (e.g. See col. 11, lines 15-54); and said NOx removal system is configured such that said delivery of said hydrogen to said NOx treatment section is substantially isolated from delivery of a substantial amount of said oxygen in said exhaust to said NOx treatment section (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 2, Murphy further discloses that the exhaust gas comprises oxygen (e.g. See col. 11, lines 15-67; col. 12, lines 1-56).

Regarding claim 3, Murphy further discloses that the NOx removal system is configured such that said delivery of said hydrogen to said NOx treatment section is substantially isolated from delivery of said exhaust to said NOx treatment section (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 4, Murphy further discloses that the NOx treatment section is configured to remove nitrogen oxides from said exhaust through adsorption (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 5, Murphy further discloses that the NOx treatment section comprises a plurality of catalyst beds (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 6, Murphy further discloses that the NOx treatment section comprises at least one NOx adsorber (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 7, Murphy further discloses that the NOx treatment section defines at least two independent NOx treatment zones (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 8, Murphy further discloses that the independent NO_x treatment zones are defined by independent NO_x adsorbers (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 9, Murphy further discloses that the independent NO_x treatment zones are defined by multiple catalyst beds packaged as a single NO_x adsorber unit (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 10, Murphy further discloses that the NO_x removal system is configured to deliver said exhaust to one of said independent NO_x treatment zones on a selective basis (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 11, Murphy further discloses that the delivery of said exhaust is affected by a flow diverter valve (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 12, Murphy further discloses that the NO_x removal system is configured to deliver said hydrogen from said hydrogen generation section to one of said independent NO_x treatment zones on a selective basis (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 13, Murphy further discloses that the NO_x removal system is configured to deliver said hydrogen and said exhaust to said NO_x treatment section such that each is delivered to different ones of said independent NO_x treatment zones on a selective basis (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 14, Murphy further discloses that the diverter is positioned downstream of said NO_x treatment section (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

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Regarding claim 15, Murphy further discloses that the diverter is configured to extract water from said exhaust (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 16, Murphy further discloses that the diverter comprises a condensation unit or a semi-permeable membrane (e.g. See col. 11, lines 15-67; col. 12, lines 1-56).

Regarding claim 17, Murphy further discloses that the hydrogen generation section is configured to deliver an amount of hydrogen sufficient to affect desulfation of said NOx treatment section (e.g. See col. 11, lines 15-67; col. 12, lines 1-56).

Regarding claim 18, Murphy further discloses that the hydrogen generation section is configured to deliver an amount of hydrogen sufficient to affect catalytic regeneration of said NOx treatment section (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 19, Murphy further discloses that the hydrogen generation section is configured to accumulate and store hydrogen (e.g. See col. 11, lines 15-67; col. 12, lines 1-56).

Regarding claim 20, Murphy further discloses that the hydrogen generation section further comprises a pressure monitor configured to monitor said accumulation and storage of hydrogen (e.g. See col. 11, lines 15-67; col. 12, lines 1-56).

Regarding claim 21, Murphy further discloses that the hydrogen generation section comprises an electrolysis unit (e.g. See col. 11, lines 15-67; col. 12, lines 1-56).

Regarding claim 22, Murphy further discloses that the hydrogen generation section comprises a hydrogen storage reservoir fed by a hydrogen output of said electrolysis unit (e.g. See col. 11, lines 15-67; col. 12, lines 1-56).

Regarding claim 23, Murphy further discloses that the hydrogen generation section is configured to deliver hydrogen to one of at least two independent NOx treatment zones of said NOx treatment section on a selective basis (e.g. See col. 11, lines 15-67; col. 12, lines 1-56).

Regarding claim 24, Murphy further discloses that the hydrogen generation section comprises at least one hydrogen injector (e.g. See col. 11, lines 15-67; col. 12, lines 1-56).

Regarding claim 25, Murphy further discloses that the hydrogen generation section comprises a pair of hydrogen injectors; and each of said hydrogen injectors is in communication with different independent NOx treatment zones of said NOx treatment section (e.g. See col. 11, lines 15-67; col. 12, lines 1-56).

Regarding claim 26, Murphy further discloses that the device comprises an engine configured to generate torque; and said engine generates said exhaust (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 27, Murphy further discloses that the engine comprises a diesel engine (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 28, Murphy further discloses that the engine is configured such that said exhaust is characterized by an oxygen content of about 1 to about 20 percent, by weight (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 29, Murphy further discloses that the device comprises an electrical generator driven by said engine; and said hydrogen generation section is powered by said electrical generator (e.g. See col. 11, lines 15-67; col. 12, lines 1-56).

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Regarding claim 30, Murphy further discloses that the device comprises at least one exhaust treatment system in addition to said NOx treatment section (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 31, Murphy further discloses that the NOx removal system comprises a controller programmed to control delivery of said exhaust to said NOx treatment section (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 32, Murphy further discloses that the controller is programmed to: monitor a condition indicative of removal of said nitrogen oxides by at least one treatment zone of said NOx treatment section; and divert exhaust from said treatment zone when said treatment zone approaches its nitrogen oxide removal capacity (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 33, Murphy further discloses that the controller is programmed to affect delivery of said hydrogen to said treatment zone following diversion of said exhaust from said treatment zone (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 34, Murphy further discloses that the NOx removal system further comprises a controller programmed to control delivery of said hydrogen to said NOx treatment section (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Regarding claim 35, Murphy further discloses that the NOx treatment section defines at least two independent NOx treatment zones; and said controller is programmed to deliver said exhaust and said hydrogen respectively to different ones of said independent NOx treatment zones (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

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Regarding claim 36, Murphy further discloses that the controller is configured to monitor accumulation and storage of hydrogen in said hydrogen generation section (e.g. See col. 11, lines 15-67; col. 12, lines 1-56).

Regarding claim 37, Murphy further discloses that the monitoring of said accumulation and storage of hydrogen is affected through a pressure monitor in communication with said controller (e.g. See col. 11, lines 15-67; col. 12, lines 1-56).

Regarding claim 38, Murphy further discloses that the device comprises: a vehicle body or stationary device; an engine configured to generate said exhaust and sufficient torque to accelerate said vehicle body or power said stationary device (e.g. See col. 10, lines 12-67; col. 11, lines 1-15; col. 13, lines 22-42).

Response to Arguments

Applicant's arguments filed September 28, 2006 have been fully considered but they are not completely persuasive. ***Claims 1-38, and 48 are pending.***

Applicant's arguments with respect to claims 1-38, and 48 have been considered but are moot in view of the new ground(s) of rejection as discussed above.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of one patents:

Benninger et al. (Pat. No. 6810657) discloses exhaust gas purification for use with an internal combustion engine.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (571) 272-4865. The examiner can normally be reached on Monday-Friday from 8:00 a.m. to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reach on (571) 272-4859. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BT
December 07, 2006



Binh Q. Tran
Patent Examiner
Art Unit 3748